Genetics Review

Topic 1.1 How does an understanding of DNA help us investigate living things?

Concept 1: Variation in living things we see around us is due to DNA
- ➢ What is DNA?
- ➢ Why is there variation among organisms on Earth?

Concept 2: DNA is made of many nucleotides linked together in specific order
- ➢ Structure of DNA
- ➢ Function of DNA

Concept 3: DNA exists in chromosomes, which contain thousands of genes
- ➢ Relationship between DNA → Chromatin → Chromosomes
- ➢ Chromosomes are Paired
- ➢ Homologous Chromosomes
- ➢ DNA → Genes → Alleles
- ➢ Karyotype

Concept 4: The structure of DNA is important to passing on genetic information
- ➢ DNA Replication
- ➢ Protein Synthesis
- ➢ DNA → RNA → Proteins

Concept 5: The different genetic make-up of organisms is reflected in the diversity of life
- ➢ Genetic diversity → Species Diversity → Ecosystem Diversity → Biodiversity (how are these related?)

Topic 1.2 How is hereditary information passed from one generation to the next?

Concept 1: Genes pass on inherited traits from parent to offspring
- ➢ Mendel's Experiments
- ➢ Homologous Chromosomes and Gametes
- ➢ Law of Segregation
- ➢ Dominant and Recessive Alleles
- ➢ Genotypes and Phenotypes
- ➢ Homozygous vs Heterozygous

Concept 2: Punnett squares show the probability of offspring inheriting specific traits
- ➢ Punnett Square to determine genotypes and phenotype of offspring
- ➢ Determine genotypic ratio and phenotypic ratio

Concept 3: Both Alleles are expressed in codominance
- ➢ What is codominance?
- ➢ Punnett square to determine genotype and phenotype of offspring

Concept 4: In incomplete dominance, alleles are neither dominant nor recessive
- ➢ What is incomplete dominance?
- ➢ What is the difference between incomplete and codominance?
- ➢ Punnett square to determine genotype and phenotype of offspring

Concept 5: Some inherited traits are due to alleles on the sex chromosomes
- ➢ Sex-linked traits